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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,571	06/23/2003	Masao Hori	HARA-072-046	9645

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EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/600,571	HORI ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *20 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/875,577.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Amendment filed on July 20, 2004 has been entered. Claims 1, 3, and 6 have been amended; and claims 8-11 have been added. Overall, claims 1-11 are pending in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (U.S. Patent 5,174,111) in view of legal precedent.

Re claims 1 and 11, as illustrated in Figures 12, 13, and 23, Nomura et al. disclose a process for purifying exhaust gas from gasoline engines comprising a step of purifying exhaust gas from a gasoline engine (2A) of a fuel-direct-injection type by contacting said exhaust gas with a single exhaust-gas purifying-use catalyst (18A) that contains a noble metal and a fire-resistant inorganic oxide (zeolite) carrying the noble metal, the fire-resistant inorganic oxide being active alumina, titania, or zirconia, or a composite oxide thereof (lines 3-5 of Abstract),

wherein the gasoline engine (2A) of a fuel-direct-injection type is one which allows fuel to be directly injected inside a cylinder of the engine, and

wherein the exhaust gas varies between a first exhaust gas state (high engine speed and high engine load area of region B in Figure 13) having a relatively high exhaust-gas temperature at an inlet of the catalyst, and a second exhaust state (medium engine speed and medium engine load area (region A in Figure 13)) that forms a more oxidizing, low-temperature atmosphere as compared with the first exhaust gas state, depending on changes in air-fuel ratio, the second exhaust gas state having a relatively low exhaust-gas temperature at the inlet of the catalyst (also see Figure 2 and lines 46-57 of column 8).

Nomura et al., however, fail to specifically disclose that the exhaust gas temperature is in a range of 350°C to 800°C for the first exhaust gas state and in a range of 200°C to 500°C for the second exhaust gas state.

Nomura et al. disclose the claimed invention except for specifying an optimum range of exhaust gas temperature for each of the first exhaust gas state and the second exhaust gas. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum range of exhaust gas temperature for each given exhaust gas state, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claim 2, in the process of Nomura et al., the exhaust gas is purified by removing hydrocarbon, carbon monoxide, and nitrogen oxides from the exhaust gas by the use of the catalyst (18A).

Re claim 3, in the process of Nomura et al., the first exhaust gas state appears when the air-fuel ratio is in the range of 13 to 15 (in the high engine load and engine speed area, the engine air-fuel ratio is approximately stoichiometry (lines 50-53 of column 8)), and the second exhaust gas state appears when the air-fuel ratio exceeds the above-mentioned air-fuel ratio (in the medium engine load and speed area, the engine air-fuel ratio is lean).

Re claim 4, in the process of Nomura et al., the second exhaust gas state appears when the air-fuel ratio ranges from more than 15 up to 50 (see paragraph above).

Re claim 5, in the process of Nomura et al., the catalyst (18A) includes at least one kind of noble metals, selected from the group consisting of platinum, palladium, rhodium, and iridium.

Re claim 7, in the process of Nomura et al., the catalyst (18A) further comprises a transition metal (see line 5 of Abstract).

Re claim 8, in the process of Nomura et al.,

- the gasoline engine includes a cylinder that serves as a combustion chamber for gasoline as a fuel; an ignition plug (not shown but obviously must have); an injector (8A) that is used for injecting the fuel; a control section (10A) for controlling an ignition timing of the ignition plug and an amount of fuel injection of the injector, and

- the control section (10A) controls an air-fuel ratio depending on the injector so as to cause the gasoline engine to be in the second exhaust gas state.

Re claims 9-10, in the process of Nomura et al., the control section controls an air-fuel ratio depending on the injector so that a temperature of the exhaust gas at an inlet of the catalyst is not more than a threshold value so as to cause the gasoline engine to be in the second exhaust gas state (see Figure 1: step 104 with NO answer and step 106 with YES answer).

Nomura et al., however, fail to specifically disclose that the threshold value is 350°C or 300°C.

Nomura et al. disclose the claimed invention except for specifying an optimum value of exhaust gas temperature at which the catalyst is maintained under. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum value of exhaust gas temperature to maintain the catalyst under, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of legal precedent as applied to claim 1 above, and further in view of official notice.

The process of Nomura et al. discloses the invention as cited above, however, fails to disclose that the catalyst includes at least one of platinum and iridium.

It is well known to those with ordinary skill in the art that platinum is a typical noble metal utilized in the catalyst (18A) of Nomura et al. Therefore, such disclosure by Nomura et al. is notoriously well known in the art so as to be proper for official notice.

Response to Arguments

5. Applicant's arguments with respect to the references applied in the previous Office Action have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents: Katoh et al. (U.S. Patent 5,402,641), Takahashi et al. (U.S. Patent 5,564,404), and Iida (U.S. Patent 5,575,266) further disclose a state of the art.

Communication

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833 or (571) 272-4862 to be effective on November 22, 2004.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623 or (571) 272-4859 to be effective on November 22, 2004. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

September 28, 2004

Tu M. Nguyen

Patent Examiner

Art Unit 3748